

IN THE CLAIMS

Claims 1 - 3 (Cancel).

Claim 4 (New) A method for producing a heritable change in *Drosophila melanogaster* comprising the steps of:

- a) culturing *Drosophila melanogaster* fruit flies;
- b) collecting 2 to 4 day old flies from the culture of step a);
- c) separating males and females obtained in step b);
- d) dividing the males into two groups and treating one group in the presence of a neuroactive drug in a medium comprising agar-agar, maize powder, brown sugar, dried yeast and nipagin and treating the second group in the absence of a neuroactive agent in a medium comprising agar-agar, maize powder, brown sugar, dried yeast and nipagin;
- e) subjecting the two groups of male flies of step d) to negative geotaxis;
- f) examining locomotor activity of the two groups of male flies of step e) in terms of height climbed, wherein an alteration in height climbed in drug treated males compared to that of normally fed males is characteristic of a neuroactive compound;
- g) further maintaining the two groups of males flies of step f) in a drug free medium;
- h) crossing separately the two groups of males flies of step g) with normal female fruit flies never exposed to any drug to obtain F1 generation;
- i) subjecting the two groups of F1 flies of step h) to negative geotaxis;
- j) examining the height climbed by the two groups of F1 flies of step i), wherein an altered locomotor activity in children of drug exposed male parents is indicative of inheritance of altered behavior;

k) self-crossing the flies of step j) to obtain F2 flies;

l) subjecting the two groups of F2 flies of step k) to negative geotaxis

assay and

m) examining the height climbed by the two groups of F2 flies of step

l), wherein an altered locomotor activity in grandchildren of drug exposed male parents is indicative of inheritance of altered behavior.